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10/680,388

10/07/2003

Fabrice Chopard

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06/22/2007

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EXAMINER

BHAT, NINA NMN

ART UNIT

PAPER NUMBER

1764

MAIL DATE

DELIVERY MODE

06/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/680,388

Applicant(s)

CHOPARD ET AL.

Examiner

N. Bhat

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☒ Claim(s) 26 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's preliminary amendment of October 7, 2003 is acknowledged.
2. The disclosure is objected to because of the following informalities: Applicant is requested to insert the heading "Brief Description of the Drawings on Page 6, line 11. Appropriate correction is required.
3. Claim 16 is objected to because of the following informalities: In claim 16, line 2 "o" should be --of--. Appropriate correction is required.
4. Claim 26 and 27 provides for the use of or "An application of" the device, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 26 and 27 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

5. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In all of the claims, applicant uses "characterized in that" language, which renders the claims indefinite because the characteristics of the

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device do not specifically point out and teach what elements comprise the device and the constructive relationship between the elements and the element plus function.

Applicant can obviate the rejection by replacing "characterized in that" language with -- wherein--. Suitable correction is required.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Romatier USP 6,190,624.

Romatier teaches a device for the exchange and/or reaction between two fluids, which includes a plate type channel reactor, which includes a first chamber and second chamber, the first and second chamber being separated by a wall of the device. The device of Romatier contains a single group of channel pairs (12). Imperforate plates 919) separate the pairs of heat exchange channels into downflow channels (15) and upflow channels (18). Romatier teaches that channels (15 and 18) can serve a number of different functions either as a preheater or as a cooler. The channels can also contain an oxidation catalyst. [Note Column 5, lines 60-67 and Column 6, lines 13-56. Romatier teaches that the plates defining the channels for carrying out the reactions and heat exchange within the chamber may have any configuration that produced narrow channels, from Figure 1, it can be seen that there is a spacer which defines a thickness, divide walls the arrangement defining a first chamber and second chamber. The device

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as claimed is "suitable for exchange and/or reaction between fluids". The channels defining the first and second chamber provide a modular configuration. With respect to applicant's claims 3-6, which recite the specific spacer arrangement, although not explicitly recited as spacers, the plate reactor includes narrow channels to provide efficient heat exchange across the thin plates. The channel width should be less than $\frac{1}{2}$ inch, the plates have thickness of 1 to 2 mm and are composed of ferrous or non-ferrous alloys, which are capable of withstanding extreme temperatures. The plates can be formed into curves or other configurations and the plates can be stacked. The plates include corrugations that are inclined to the flow of reactants and heat exchange fluid. The corrugations maintain a varied channel width defined by the height of the corrugations.[Note Column 7, lines 29-67] The corrugations are functionally equivalent to applicant's disturbing devices as recited in Claims 13-15. Figure 6 and 7 teach an arrangement wherein two independent groups of channel pairs circulate different fluids in isolation from opposite ends of a reactor arrangement. Specifically inlet stream (51) supplies fluid to a manifold having upper inlet chamber (53) and upper outlet chamber (54). Inlet chamber 53 distributes inlet stream 51 to channel pairs 55. Upper outlet stream 56 collects fluid from the first group of channel pairs 55 through upper outlet chambers in the channel openings. A lower input stream 58 is distributed to a second group of channel pairs (59) via manifold as described and shown in Figures 6 and 7. The arrangement as taught and described by Romatier enable two different fluids to be circulate in heat exchange relation in a complete cross-flow relationship.[Note Column

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8, lines 58-67 and Column 9, lines 1-31.] It is maintained that the device as taught and described by Romatier fully anticipates applicant's invention as claimed.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Girod et al.'311 teach a reactor arrange for indirectly heating a reactant stream with a heat exchange stream which uses an arrangement corrugated heat exchange plates. Dandekar et al. teach a process and apparatus for indirectly heating an endothermic reaction by combustion of reactants or products from the endothermic reaction using a plate heat exchange arrangement. Hoffmann et al. teach a thin multistage catalytic reactor with internal heat exchanger. Brundage teach a process for controlling carbon dioxide in PrOx reactor, which is a plate type channel reactor. Romatier et al. '640 a process and apparatus for indirectly exchanging heat with narrow channel in heat exchange reaction zones. Joel et al. teach a plate heat exchange with parallel and counter-flow circulation of the heat exchange fluids, which is constructed by stacking, ribbed plates. Rousle teach an electric boiler for heat transferring liquids. The heater includes a module comprising two stamped plates, the plates include a herringbone corrugations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



N. Bhat
Primary Examiner
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